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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/602,054  
Filing Date: June 24, 2003  
Appellant(s): CHOO ET AL.

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Scott L. Appelbaum  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 22 June 2009 appealing from the Office action mailed 20 February 2009.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

10/878,395 request for rehearing filed on 09 April 2009.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 57, 58, 60, and 62-65.

Claims 1-56 and 61 have been canceled.

Claims 59 and 66-77 are withdrawn from consideration as not directed to the elected species.

Rejection of claim 61 in the Final Rejection mailed 20 February 2009 is a cut-and-paste error.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,978,065	Kawasumi	11-1999
6,222,603	Sakai	4-2001
2,394,293	Deem	11-1940
5,731,860	Harada	3-1998

Japanese Patent Application Pub. No. JP 56114928 to Adachi, 09 September 1981

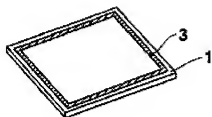
**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

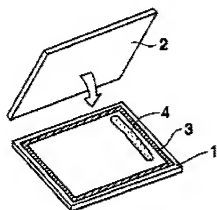
1. Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasumi et al (Kawasumi) USPAT 5,978,065 in view of Adachi, Japanese patent application publication JP 56114928 A and Sakai et al [Sakai] USPAT 6,222,603.

As to claim 57, Kawasumi discloses (Figures 1A-3B) apparatus and a method [system or apparatus] for manufacturing liquid crystal displays (entire patent, background of the invention, and especially col. 5, line 13 through col. 7, line 14), comprising: applying sealant on one of two substrates of a mother glass, the mother glass having at least one liquid crystal cell (col. 5, lines 14-37) [inherently requires Applicant's sealant applying unit, even if it is manual], a substrate-attaching unit, and applying a predetermined force [pressing] toward each other, 5 and 7 [Figures 1C and 3B], conjoining substrates in a vacuum (background, suitable though more costly method – affords better degasification of liquid crystal material; please note numerous references teach these steps/apparatus.) exposure unit hardening the sealant [Fig 2]. Please note Kawasumi states his method *may* be done without costly vacuum; Kawasumi does *not* state his method *must* be done without costly vacuum ["not necessary to use an expensive vacuum apparatus" col. 7, lines 1-15].

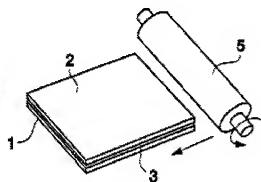
**FIG. 1A**



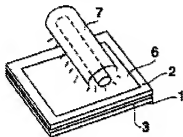
**FIG. 1B**



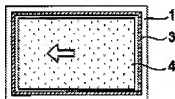
**FIG. 1C**



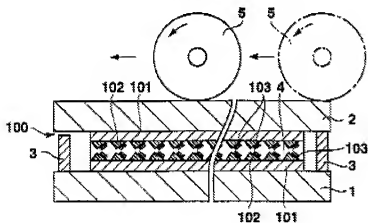
**FIG. 2**



**FIG. 3A**



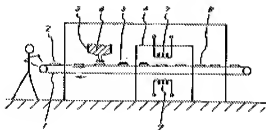
**FIG. 3B**



Kawasumi does not explicitly disclose 1) the use of first loading unit and an in-line conveying unit nor 2) substrate-attaching unit that comprises: a substrate-attaching

vacuum chamber comprising: a first compression plate and a second compression plate supporting the two substrates.

Adachi teaches 1) the use of a first loading unit [at left in illustration] and a belt conveyor to provide a cleaner environment for the operators.



Adachi is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add the use of a first loading unit and a belt conveyor to provide a cleaner environment for the operators.

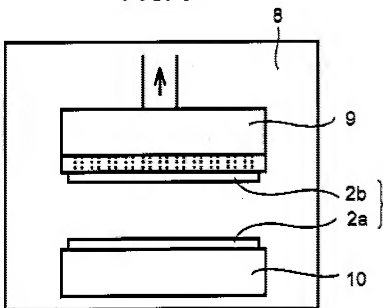
Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD system of Kawasumi with the first loading unit and a belt conveyor of Adachi to provide a cleaner environment for the operators.

Saki teaches 2) a substrate-attaching unit comprises: a substrate-attaching vacuum chamber comprising: a first compression plate and a second compression plate supporting the two substrates and applying a predetermined force toward each other wherein the air-pressure of the vacuum chamber is then decreased, and the alignment of a pair of substrates is performed and a cell gap is formed by pressing the substrates toward each other, by which the gap precision, the gap uniformity and the



alignment precision of an LCD device can be improved [Entire patent, especially Abstract, Figure 3, and col. 6, line 53 through col. 7, line 30].

FIG. 3



Sakai is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add the use of a first compression plate and a second compression plate supporting the two substrates and applying a predetermined force toward each other wherein the air-pressure of the vacuum chamber is then decreased, and the alignment of a pair of substrates is performed and a cell gap is formed by pressing the substrates toward each other, by which the gap precision, the gap uniformity and the alignment precision of an LCD device can be improved [Entire patent, especially Abstract and Figure 3].

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD system of Kawasumi with a first compression plate and a second compression plate supporting the two substrates and applying a predetermined force toward each other of Sakai wherein the air-pressure of the vacuum chamber is then decreased, and the alignment of a pair of substrates is performed and a cell gap is formed by pressing the substrates toward each other, by which the gap precision, the gap uniformity and the alignment precision of an LCD device can be improved [Entire patent, especially Abstract and Figure 3].

2. Claims 58 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasumi in view of Adachi and Sakai as applied to claim 57 above, and further in view of Deem USPAT 2,394,293.

Kawasumi in view of Abachi and Sakai teach the in-line system of claim 57.

Kawasumi in view of Abachi and Sakai do not explicitly teach an apparatus wherein the substrate-attaching unit includes two or more vacuum chambers arranged in parallel.

Deem teaches that multiple vacuum [exhausting] sections, in an in-line manufacturing apparatus, may "obviously be placed in parallel to secure any desired

through put or capacity over and beyond that obtainable with one unit." [page 3, right column, lines 5-14].

Deem is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add the use of multiple vacuum chambers, in an in-line manufacturing apparatus, placed in parallel to secure any desired through put or capacity over and beyond that obtainable with one unit." [page 3, right column, lines 5-14].

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD system of Kawasumi and Adachi with the multiple vacuum chambers of Deem, in an in-line manufacturing apparatus, placed in parallel to secure any desired through put or capacity over and beyond that obtainable with one unit." [page 3, right column, lines 5-14].

3. Claims 61-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasumi in view of Adachi and Sakai and further in view of Harada et al (Harada) USPAT 5,731,860.

As to claims 61-65, Kawasumi in view of Abachi and Sakai teach the in-line system of claim 57.

Kawasumi in view of Abachi and Sakai do not explicitly teach the use of vacuum chucks with holes and a vacuum sequence in the substrate attaching and sealant curing processes.

Harada teaches the use of such an apparatus to achieve precision cell gap and high production yield [Abstract and entire disclosure].

Harada is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add the use of vacuum chucks with holes and a vacuum sequence [col. 8, lines 31-56] in the substrate attaching and sealant curing processes to achieve precision cell gap and high production yield [Abstract and entire disclosure].

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD system of Kawasumi and Adachi with the vacuum chucks with holes and a vacuum sequence [col. 8, lines 31-56] of Harada in the substrate attaching and sealant curing processes to achieve precision cell gap and high production yield [Abstract and entire disclosure].

Please note the principles of vacuum chucking and vacuum sequence [col. 8, lines 31-56] are robustly taught by Harada in such a way as to render numerous minor structural variations (e.g., tubes, slits, holes, etc.) obvious to one of ordinary skill in the art.

#### **(10) Response to Argument**

**Appellant's Argument:** At page 7, establishment of prima facie case of obviousness is not legally sufficient.

**Response:** Respectfully, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Kawasumi provides the basic teaching of the device, method, and apparatus. Adachi teaches the first loading unit and conveyor [reference Final Rejection at pages 5 and 6], while Sakai teaches the specifics of the substrate attaching compression plates etc.

The combination of applied prior art is considered robust, with robust motivation, to render obvious to one of ordinary skill, many in-line apparatus for manufacturing liquid crystal displays, including those broadly claimed by Appellant.

**Appellant's Argument:** At page 9, Kawasumi teaches away from the combination.

**Response:** Respectfully, Kawasumi clearly does NOT teach away. Kawasumi teaches his method MAY be done without costly vacuum, but Kawasumi does NOT

teach that his method WILL NOT WORK with costly vacuum [Kawasumi, col. 7, lines 1-15].

**Appellant's Argument:** At page 9, examiner misinterpreted the patent law.

**Response:** Respectfully, examiner checked with QAS about patent law regarding teaching away and confirmed examiner's rejection is sound.

Kawasumi (the base reference) may teach away in so far as to prefer something in contrast to the claimed invention. In a combination under 103, the teaching to prefer the limitations of the claimed invention most often lie in the secondary reference.

A prohibited teaching away under patent law entails a base reference disclosure (in this case) that the invention WILL NOT WORK with the modification taught by the secondary reference. Clearly Kawasumi teaches vacuum is optional, and it is preferred to eliminate vacuum to avoid cost, but Kawasumi does NOT disclose that his invention WILL NOT WORK with well known vacuum. However, one of ordinary skill in the art surely knows that vacuum is very commonly used as a reliable way to eliminate bubbles, so vacuum is preferable, although more costly, for expensive (high-end) displays.

Examiner's interpretation of the references and examiner's application of patent law are sound.

**Appellant's Argument:** At page 10, more on teaching away.

**Response:** Respectfully, the preferences of the base reference are VERY OFTEN in contrast to the teachings of the secondary reference. The whole point of using a secondary reference is to teach something that the base reference did not consider, or something that the base reference considered differently or incorrectly. Clearly one of ordinary skill in the art would know vacuum to be optional in Kawasumi. Clearly one of ordinary skill would not be confused about the applicability of the secondary references. Vacuum is COMMONLY used for high resolution, costly, high-end display production and cheaper displays (where lower-yield and lower-quality is tolerable) are done without vacuum in order to price compete. Both vacuum and non-vacuum methods and apparatus are rendered obvious by the applied prior art.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

**Appellant's Argument:** At pages 11 and 12, Appellant argues certain "units" are not taught.

**Response:** Respectfully, Appellant's terms are NOT defined. Appellant's terms are, as a matter of examining duty, given their most broad reasonable interpretations.

The apparatus and methods of the prior art are considered to quite reasonably read on Applicant's invention(s) as broadly claimed.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

**Appellant's Argument:** At page 13, the prior art fails to teach a substrate combination unit.

**Response:** Respectfully, Final Rejection pages 3~5 include rejection of the claimed substrate combination unit, inherently required as part of the invention of Kawasumi. Clearly the substrates are combined, attached, pressed, and cured by the method and apparatus of Kawasumi. Also [please see limitations, independent claim 57], there seems to be no structural limitation to the substrate combination unit that is not met by the first loading unit and/or the in-line convey unit.

Lacking any actual structural limitations, the claimed substrate combination unit is considered clearly met by Kawasumi, because he clearly combines the substrates, as does Sakai.



**Appellant's Argument:** At page 14, dependent claims are allowable because independent claim is allowable.

**Response:** Respectfully, the independent claim is properly rejected, so the dependent claims are not allowable for that reason.

**Appellant's Argument:** At page 15, Deem does not cure deficiencies.

**Response:** Respectfully, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Deem clearly teaches motivation for parallel vacuum chambers to improve production throughput.

**Appellant's Argument:** At page 17, Harada does not cure deficiencies.

**Response:** Respectfully, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re*

*Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Harada clearly teaches motivation for vacuum chucks with holes etc. for improved yield.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Timothy Rude

/TIMOTHY RUDE/

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